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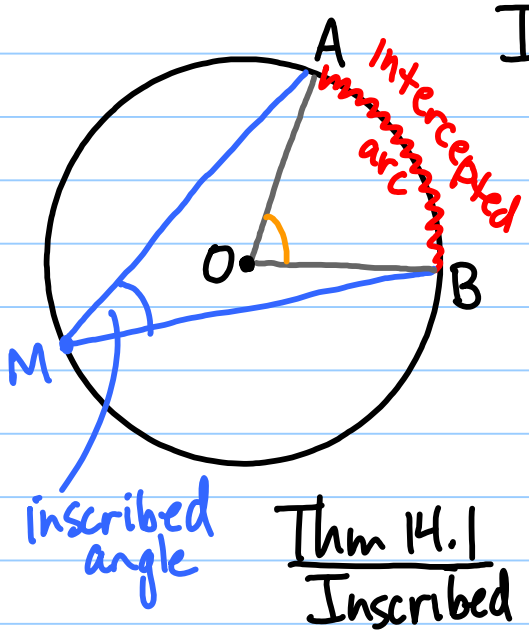
14.1 Inscribed Angles



In circle O, $\angle AOB$: central angle

$\overset{\frown}{AB}$: minor arc

* $m\angle AOB = m\overset{\frown}{AB}$
* intercepted arc

$\angle AMB$: inscribed angle

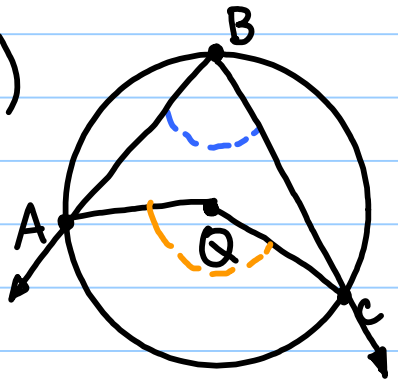
→ vertex lies on the circle

→ sides are chords, $\overline{MA}$ & $\overline{MB}$

Thm 14.1

Inscribed angle is $\frac{1}{2}$ of the intercepted arc.

ex 1)

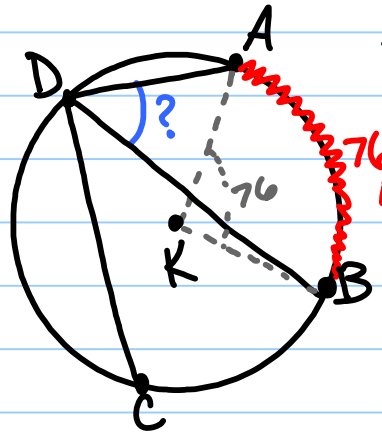


Name a central angle & an inscribed $\angle$.

→ $\angle AQC$ ($\overset{\frown}{AC}$)

→ $\angle ABC$

ex 2)



If $m\overset{\frown}{AB} = 76$, find $m\angle ADB$.

central angle

$m\angle ADB$ is half of the central angle....

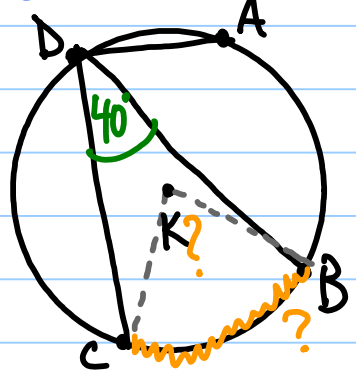
$\frac{76}{2} = \boxed{38°}$

ex 3) If $m\angle BDC = 40°$, find $m\overset{\frown}{BC}$.

inscribed angle

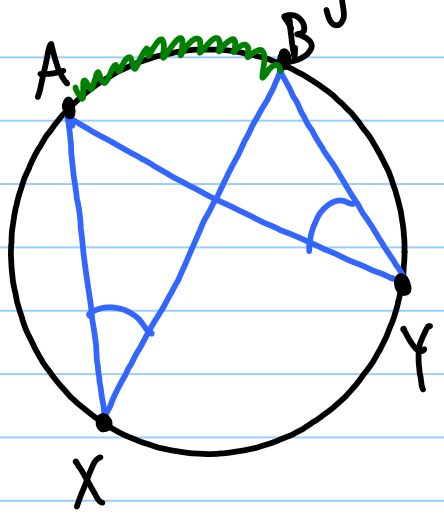
aka central angle

$m\overset{\frown}{BC}$ is double the inscribed angle: $2(40) = \boxed{80°}$



Thm 14.2

If inscribed angles intercept the same arc (or $\cong$ arcs), then the angles are congruent.



$\angle AXB \cong \angle AYB$

ex 4) $m\angle AXB = 6y+7$ & $m\angle AYB = 7y$.

Find y.

By Thm 14.2, $m\angle AXB = m\angle AYB$

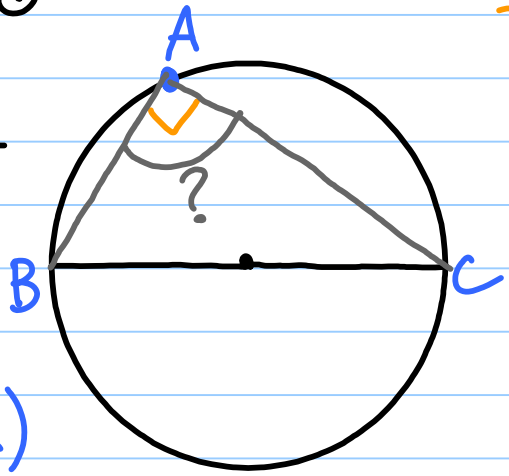
$6y+7 = 7y$

$-6y \quad -6y$

$7 = y$

Thm 14.3

If an inscribed $\angle$ of a $\odot$ intercepts a semi-circle, the angle is a right $\angle$



*Note:
$m\angle B$ & $m\angle C = 90°$
(acute $\angle$s in a rt. Δ)